

**Notice of Allowability**

Application No.

09/334,414

Examiner

Melanie Jagannathan

Applicant(s)

BASSO ET AL.

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2666

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 4/29/2005.
2. ☒ The allowed claim(s) is/are 1-3, 6-8, 11-13, 16-20, 23-27, 34-36, 38-41, 43-45, 47-51 renumbered as 1-34.
3. ☒ The drawings filed on 16 June 1999 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |   |
|---|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)  | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)                                 |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date <u>7/20/05</u> . |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment   |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material          | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance                        |
|   | 9. <input type="checkbox"/> Other _____   |

## DETAILED ACTION

### EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. James A. Blanchette on July 20, 2005.

The application has been amended as follows:

1. (CURRENTLY AMENDED): In an Asynchronous Transfer Mode (ATM) system composed of at least a first data network (10) having a plurality of switching nodes interconnected by connection lines and including end switching nodes each being connected to at least a Data Transmission equipment (DTE) and being used either as an entry border node (22) when it is connected to a source DTE (18) or an exit border node (28) when it is connected to a destination DTE (20), said first data network using a routing protocol of the type wherein a best route between a source DTE and a destination DTE is determined in a control point associated with said entry border node to which is connected said source DTE and wherein a set-up message is sent by said entry border node, and a second data network (12) including at least one DTE to be used as destination DTE in an exchange of data with a source DTE connected to said first data network and being interconnected with said first data network by means of at least two Interim Inter Switch Protocol (IISP) links (14, 16) not supporting said routing protocol, the at least two IISP links not supporting said routing protocol connecting switching nodes of the first data network with switching nodes of the second data network;

method for extending the crankback procedure over all said system comprising:

when the a switching node of said first data network receives a clearing message on one of said IISP links indicating that said set-up message has been rejected because said best route is

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blocked anywhere in said second data network, said switching node building a crankback information element to be added to said clearing message, said crankback information element and said clearing message then transmitted to said entry border node causing said entry border.

3. (CURRENTLY AMENDED): The method according to claim 2, wherein said blocked transit type is "preceding" and said blocked transit identifier identifies the node preceding the IISP link not supporting said routing protocol as being blocked.

4. (CANCELLED)

5. (CANCELLED)

6. (CURRENTLY AMENDED): Asynchronous Transfer Mode (ATM) system composed of at least a first data network (10) having, a plurality of switching nodes interconnected by connection lines and including end switching nodes each being connected to at least a Data Transmission equipment (DTE) and being used either as an entry border node (22) when it is connected to a source DTE (18) or an exit border node (28) when it is connected to a destination DTE (20), said network using a routing protocol of the type wherein a best route between a source DTE and a destination DTE is determined in a control point associated with said entry border node to which is connected said source DTE and wherein a set-up message is sent by said entry border node, and a second data network (12) including at least one DTE to be used as destination DTE in an exchange of data with a source DTE connected to said first data network and being interconnected with said first data network by means of at least two Interim Inter Switch Protocol (IISP) links (14, 16) not supporting said routing protocol, the at least two IISP links not supporting said routing protocol connecting switching node of the first data network with switching nodes of the second data network; said system further comprising:

means for extending the crankback procedure over all said system, when a switching node of said first data network receives a clearing message on one of said IISP links indicating that said set-up message has been rejected because said best route is blocked anywhere in said second data network, a crankback information element to be added to said clearing message, the clearing message transmitted from the switching node to said entry border node of the first network

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causing said entry border node to find an alternate route avoiding the portion of said best route which is blocked.

8. (CURRENTLY AMENDED): The system according to claim 7, wherein said blocked transit type is "preceding" and said blocked transit identifier identifies the node preceding the IISP link not supporting said routing protocol as being blocked.

9. (CANCELLED).

10. (CANCELLED).

11. (CURRENTLY AMENDED): For use in a system having a first network and a second network, said first network having at least one entry border node connected to a source node, said first network adhering to a routing protocol which includes the use of a crankback procedure to inform the entry border node of a path failure within the first network, said second network having at least one exit border node connected to a destination node, said second network including at least some elements which do not use a crankback procedure, said first and second networks being interconnected through a plurality of User-Network-Interface (UNI) links connecting a plurality of switching nodes within each network, the plurality of UNI links ~~not supporting said routing protocol~~ connecting at least one switching node of the first data network with at least one switching node of the second data network, a method of extending the crankback procedure to cover path failures in said second network, said method being implemented in a switching node in said first network on a proposed path between the source node and the destination node and comprising the steps of:

monitoring messages returned from the second network relating to the proposed path for a clearing message indicative of a failure in the proposed path anywhere in the second network;

in response to detection of said clearing message, generating a crankback information element;

modifying said clearing message by adding said generated crankback information element;

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transmitting the modified clearing message from the switching node of the first data network to the entry border node.

13. (CURRENTLY AMENDED): A method for use in a switching node in a first network of a system having a first and second network using a best-route routing protocol interconnected by at least two User-Network-Interface (UNI) links ~~not supporting said protocol~~, the at least two UNI links ~~not supporting the routing protocol~~ connecting switching nodes of the first network to switching nodes of the second computer network, said first network having an entry border node to determine a best route, said method comprising:

receiving, at said switching node of the first network, a clearing message from said second network indicating a rejection of said best route;

generating, at said switching node of the first network, a crankback information element in response to said clearing message;

adding, at said switching node of the first network, said crankback information element to said clearing message; and

forwarding said clearing message and crankback information element from said switching node to said entry border node.

14. (CANCELLED).

15. (CANCELLED).

19. (CURRENTLY AMENDED): ~~An exit border~~ A switching node in a first network of a system having a first and second network using a best-route routing protocol interconnected by at least two Interim Inter Switch Protocol (IISP) links ~~not supporting said protocol~~, the at least two IISP links ~~not supporting the routing protocol~~ connecting a switching nodes of the first network to switching nodes of the second computer network, said first network having an entry border node to determine a best route, said switching node comprising:

means for receiving a clearing message from said second network indicating a rejection of said best route;

means for generating a crankback information element in response to said clearing message;

means for adding said crankback information element to said clearing message; and  
means for forwarding said clearing message and crankback information element to said entry border node.

20. (CURRENTLY AMENDED): A system, comprising:

a first network using a best-route routing protocol;

at least two Interim Inter Switch Protocol (IISP) links ~~not supporting said protocol~~  
connected to said first network;

a second network using a best-route routing protocol, said second network interconnected  
with said first network by said at least two IISP links;

an entry border node in said first network to send a set-up message having a best route  
from said first network to said second network; and

a first switching node in said first network connected to one of said at least two IISP links, a  
second switching node in said second network connected to said first switching node by said one  
of said at least two IISP links, said first switching node to receive a clearing message from said  
second network indicating a rejection of said best route, said first switching node to generate a  
crankback information element in response to said clearing message, and add said crankback  
information element to said clearing message, and forward said clearing message and crankback  
information element to said entry border node.

21. (CANCELLED)

22. (CANCELLED)

24. (CURRENTLY AMENDED): The system of claim 20, further comprising:

wherein said a best-route routing protocol is a Private Network Network Interface (PNNI)  
protocol.

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26. (CURRENTLY AMENDED): In a system having a first and second network using a best-route routing protocol interconnected by at least two Interim Inter Switch Protocol (IISP) links ~~not supporting said protocol~~, a method comprising:

sending a set-up message from a first node of said first network to a second node of said second network over one of said at least two IISP links, said set-up message having a best route;

receiving a clearing message at said first border node of said first network from said second network indicating a rejection of said best route;

generating, at said first node, a crankback information element in response to said clearing message;

adding said crankback information element to said clearing message;

forwarding said clearing message and crankback information element from said first node to said entry border node in said first network; and

determining, at said entry border node in said first network, an alternate route over another of said at least two IISP links, thereby avoiding said rejected portion of said best route.

27. (CURRENTLY AMENDED): A computer readable media, comprising: said computer readable media containing instructions for execution in a processor for: ~~the practice of the method of claim 1, or claim 11, or claim 13, or claim 26~~

receiving by the node a clearing message indicating a link in a second network is blocked;

determining by the node that the clearing message arrived over a link to the second computer network that does not support the best-route protocol and that the clearing message contains a cause for which crankback may be generated;

in response to the determining, generating a new clearing message at the node including a crankback information element;

forwarding the new clearing message including the crankback information element to an entry border node, whereby the entry border node selects an alternate route over a second network link that does not support the best-route protocol to access the second network; and wherein the link to the second computer network that does not support the best-route protocol is a User-Network-Interface (UNI) link.

33. (CANCELLED).

34. (CURRENTLY AMENDED) ~~The method of claim 33 further comprising:~~

A method for operating computer networks comprising:

providing a first computer network implementing a PNNI network protocol;

providing a second computer network implementing the PNNI network protocol;

interconnecting the first and the second computer networks by at least two network links not supporting the PNNI protocol;

receiving by a switching node of the first computer network a clearing message from the second computer network indicating a link in the second network is blocked;

determining by the switching node, that the clearing message arrived over a first of the at least two network links not supporting the PNNI protocol and that the clearing message contains a cause for which crankback may be generated;

in response to the determining, generating a new clearing message at the switching node including a crankback information element;

forwarding the clearing message including the crankback information element to an entry border node in the first computer network;

selecting, at the entry border node in the first network, an alternate route over a second of the at least two network links not supporting the PNNI protocol to avoid the link in the second computer network that is blocked; and



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wherein the at least two network links not supporting the PNNI protocol are Interim Inter Switch Protocol (IISP) links.

35. (CURRENTLY AMENDED) ~~The method of claim 33 further comprising:~~

A method for operating computer networks comprising:

providing a first computer network implementing a PNNI network protocol;

providing a second computer network implementing the PNNI network protocol;

interconnecting the first and the second computer networks by at least two network links not supporting the PNNI protocol;

receiving by a switching node of the first computer network a clearing message from the second computer network indicating a link in the second network is blocked;

determining by the switching node, that the clearing message arrived over a first of the at least two network links not supporting the PNNI protocol and that the clearing message contains a cause for which crankback may be generated;

in response to the determining, generating a new clearing message at the switching node including a crankback information element;

forwarding the clearing message including the crankback information element to an entry border node in the first computer network;

selecting, at the entry border node in the first network, an alternate route over a second of the at least two network links not supporting the PNNI protocol to avoid the link in the second computer network that is blocked; and

wherein the at least two network links not supporting the PNNI protocol are User-Network-Interface (UNI) links.

36. (CURRENTLY AMENDED) The method of claim 33 34 further comprising:

wherein the crankback information element includes a blocked transit type field, a blocked transit identifier field, and a crankback cause field.

37. (CANCELLED)

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38. (CURRENTLY AMENDED) A method for operating a node in a first computer network, the first computer network supporting a best-route routing protocol, the method comprising:

receiving by the node a clearing message indicating a link in a second network is blocked;

determining by the node that the clearing message arrived over a link to the second computer network that does not support the best-route protocol and that the clearing message contains a cause for which crankback may be generated;

in response to the determining, generating a new clearing message at the node including a crankback information element;

forwarding the new clearing message including the crankback information element to an entry border node, whereby the entry border node selects an alternate route over a second network link that does not support the best-route protocol to access the second network; and

The method of claim 37, further comprising:

wherein the link that does not support the best-route protocol is a Interim Inter Switch Protocol (IISP) link.

40. (CURRENTLY AMENDED) A method for operating a node in a first computer network, the first computer network supporting a best-route routing protocol, the method comprising:

receiving by the node a clearing message indicating a link in a second network is blocked;

determining by the node that the clearing message arrived over a link to the second computer network that does not support the best-route protocol and that the clearing message contains a cause for which crankback may be generated;

in response to the determining, generating a new clearing message at the node including a crankback information element;

forwarding the new clearing message including the crankback information element to an entry border node, whereby the entry border node selects an alternate route over a second network link that does not support the best-route protocol to access the second network; and  
~~The method of claim 37, further comprising:~~

wherein the link that does not support the best-route protocol is a User-Network-Interface (UNI) link.

41. (CURRENTLY AMENDED) The method of claim ~~37~~ 38 further comprising:

wherein the crankback information element includes a blocked transit type field, a blocked transit identifier field, and a crankback cause field.

42. (CANCELLED).

43. (CURRENTLY AMENDED) ~~The network system of claim 33 further comprising:~~

A network system comprising:

a first computer network implementing a PNNI network protocol;

a second computer network implementing the PNNI network protocol;

at least two network links not supporting the PNNI protocol interconnecting the first and the second computer networks;

switching node of the first computer network adapted to receive a clearing message from the second computer network indicating a link in the second network is blocked, the switching node further adapted to:

- a) determine that the clearing message arrived over a first of the at least two network links not supporting the PNNI protocol and that the clearing message contains a cause for which crankback may be generated,
- b) in response to the determination, generate a new clearing message at the switching node including a crankback information element,
- c) forward the clearing message including the crankback information element;

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an entry border node in the first computer network for receiving the clearing message including the crankback information and selecting an alternate route over a second of the at least two network links not supporting the PNNI protocol to avoid the link in the second computer network that is blocked; and

wherein the at least two network links not supporting the PNNI protocol are Interim Inter Switch Protocol (IISP) links.

44. (CURRENTLY AMENDED) ~~The network system of claim 33 further comprising:~~

A network system comprising:

a first computer network implementing a PNNI network protocol;

a second computer network implementing the PNNI network protocol;

at least two network links not supporting the PNNI protocol interconnecting the first and the second computer networks;

switching node of the first computer network adapted to receive a clearing message from the second computer network indicating a link in the second network is blocked, the switching node further adapted to:

- d) determine that the clearing message arrived over a first of the at least two network links not supporting the PNNI protocol and that the clearing message contains a cause for which crankback may be generated,
- e) in response to the determination, generate a new clearing message at the switching node including a crankback information element,
- f) forward the clearing message including the crankback information element;

an entry border node in the first computer network for receiving the clearing message including the crankback information and selecting an alternate route over a second of the at least two network links not supporting the PNNI protocol to avoid the link in the second computer network that is blocked; and

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wherein the at least two network links not supporting the PNNI protocol are User-Network-Interface (UNI) links.

45. (CURRENTLY AMENDED) The network system of claim 33 43 further comprising:

wherein the crankback information element includes a blocked transit type field, a blocked transit identifier field, and a crankback cause field.

46. (CANCELLED)

47. (CURRENTLY AMENDED)

A node in a first computer network, the first computer network supporting a best-route routing protocol, the node comprising:

means for receiving at the node a clearing message indicating a link in a second network is blocked;

means for determining by the node that the clearing message arrived over a link to the second computer network that does not support the best-route protocol and that the clearing message contains a cause for which crankback may be generated;

in response to the determining, means for generating a new clearing message at the node including a crankback information element;

means for forwarding the new clearing message including the crankback information element to an entry border node, whereby the entry border node determines an alternate route over a second network link that does not support the best-route protocol to access the second network; and

wherein the link that does not support the best-route protocol is a Interim Inter Switch Protocol (IISP) link.

48. (CURRENTLY AMENDED) The node of claim 37- 47 further comprising:

wherein the best-route routing protocol is a Private Network Network Interface (PNNI) protocol.

49. (CURRENTLY AMENDED) ~~The node of claim 37 further comprising:~~

A node in a first computer network, the first computer network supporting a best-route routing protocol, the node comprising:

means for receiving at the node a clearing message indicating a link in a second network is blocked;

means for determining by the node that the clearing message arrived over a link to the second computer network that does not support the best-route protocol and that the clearing message contains a cause for which crankback may be generated;

in response to the determining, means for generating a new clearing message at the node including a crankback information element;

means for forwarding the new clearing message including the crankback information element to an entry border node, whereby the entry border node determines an alternate route over a second network link that does not support the best-route protocol to access the second network; and

wherein the link that does not support the best-route protocol is a User-Network-Interface (UNI) link.

50. (CURRENTLY AMENDED) The node of claim ~~37~~ 47 further comprising:

wherein the crankback information element includes a blocked transit type field, a blocked transit identifier field, and a crankback cause field.

51. (CURRENTLY AMENDED) A computer readable medium containing executable program instructions for operating a node in a first network supporting a best-route routing protocol, the executable program instructions comprising program instructions for:

receiving by the node a clearing message indicating a link in a second network is blocked;

determining by the node that the clearing message arrived over a link to the second computer network that does not support the best-route protocol and that the clearing message contains a cause for which crankback may be generated;

in response to the determining, generating a new clearing message at the node including a crankback information element;

forwarding the new clearing message including the crankback information element to an entry border node, whereby the entry border node selects an alternate route over a second network link that does not support the best-route protocol to access the second network-; and

wherein the link to the second computer network that does not support the best-route protocol is an Interim Inter Switch Protocol (IISP) link.

### *Allowable Subject Matter*

2. The following is an examiner's statement of reasons for allowance: Prior art of record does not disclose, in single or in combination, method for extending crankback procedure over system where switching node receives clearing message over IISP links or UNI links indicating setup message has been rejected because best route is blocked, switching node building crankback information element of PNNI protocol to be added to clearing message and transmitted to entry border node causing entry border node to find alternate route avoiding portion of best route which is blocked.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melanie Jagannathan whose telephone number is 571-272-3163. The examiner can normally be reached on Monday-Friday from 8:00 a.m.-4:30 p.m..

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on 571-272-3174. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MJ

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